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ABSTRACT

The primary objective of this study was to examine the environmental worldview of preservice teaches at a midwestern liberal arts college. As an indicator of environmental worldview, the New Environmental Paradigm (NEP) scale was used. Three research questions were examined: (1) What is the environmental worldview of preservice teachers?; (2) Are the worldviews consistent across all three dimensions of the scale?; and (3) Do education majors have different environmental worldviews as compared to other college students? Subjects were 147 undergraduate students. Data were collected from students at all levels of education. Sixty-four percent were enrolled in the teacher education program. The results indicated that a clear majority of preservice teachers held an environmentally friendly worldview. Some variations did appear when considering the preservice teachers' worldviews across all three dimensions of the scale. The strongest areas of agreement with the NEP were in the "Balance of Nature." Similar agreement was found on the "Man over Nature" dimension. The weakest area of agreement with the NEP was the "Limits to Growth" dimension with only 68 percent agreement across that dimension's four statements. Preservice teachers generally had a similar environmental worldview when compared with other college students. (Contains 10 references.) (Author/JB)

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The Environmental Worldview of Preservice Teachers

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ABSTRACT

The primary objective of this study was to examine the environmental worldview of preservice teachers at a midwestern liberal arts college. As an indicator of environmental worldview, the New Environmental Paradigm (NEP) scale was used (Dunlap and Van Liere, 1978). Three research questions were examined: (1) What is the environmental worldview of preservice teachers?, (2) Are the worldviews consistent across all three dimensions of the scale?, and (3) Do education majors (preservice teachers) have different environmental worldviews as compared to other college students? The results indicated that a clear majority of preservice teachers held an environmentally friendly worldview; however, some inconsistencies were found among the three dimensions of the scale. Preservice teachers generally had a similar environmental worldview when compared with other college students. Implications and limitations of the study are discussed.

Over the past several years, college students have communicated strong feelings concerning issues related to the environment. For example, results of a survey of college freshmen indicated that interest in becoming active in the fight to help the environment steadily increased during the last half of the eighties. The same survey indicated a growing belief that the federal government should do more to protect the environment, with 86% of freshmen expressing that sentiment in 1989 (Astin, 1990). The National Wildlife Federation (NWF) (1990) initiated a comparable survey and arrived at similar conclusions. The NWF surveyed 500 undergraduates, ages 17-24 years, from 50 four-year colleges and found that almost 75% of the students declared that the law should require recycling of newspapers, glass, and cans. Ninety percent of the students expressed a willingness to pay more for environmentally safe products.

This research indicates that college students appear to hold definite beliefs regarding environmental issues. The current study will provide an empirical glimpse into the affective domain of environmental education in regard to college students, in particular, preservice teachers. The attitudes and values of teachers will influence how students experience environmental education. Consequently, it is important to be aware of teachers' attitudes and values in regard to environmental issues. The primary purpose of the present study is to examine the environmental worldview of preservice teachers attending a small midwestern liberal arts college.

Related Research

Some researchers suggest that interest and support of environmental issues have endured because of a change in our culture's environmental worldview. The construct of environmental

worldview was developed by Catton and Dunlap (1978). Catton and Dunlap proposed that persistent public support for environmental concerns is due to a paradigmatic shift. Their theory asserts that public attitudes toward the environment are moving from the "Dominant Social Paradigm" to the "New Environmental Paradigm." The Dominant Social Paradigm (DSP) is a worldview in which humans are seen as separate from the rest of nature. The DSP is based on the assumption that human progress and technology will eventually dominate nature and will be capable of solving all problems, including ecological catastrophes. On the other hand, the New Environmental Paradigm (NEP) views humans as part of the natural world rather than being immune from natural laws and detached from nature. In other words, there is a paradigmatic shift away from the conviction that humans will eventually dominate all of nature through the use of technology and a shift toward efforts to understand the limitations placed upon all living things by nature and to develop a framework for living with them (Arcury, Johnson, & Scollay, 1986). This ecologically integrative view of humans has been perceived as a direct result of the environmental movement (Albrecht, Bultena, Hoiberg, & Nowak, 1982).

Dunlap and Van Liere (1978) developed the NEP twelve item-scale in order to investigate these paradigmatic shifts. The scale appears to measure three dimensions: balance of nature, limits to growth, and man over nature (Albrecht et al., 1982; Geller & Lasley, 1985). Arcury et al. (1986) found support for the construct when a path analysis indicated that worldview (as measured by a short version of the NEP scale) had a significant, independent, positive effect ($p < .05$) on self-reported environmental knowledge. The authors suggested that one of the basic propositions of the theory is that as environmental worldview becomes more consistent with the NEP, greater efforts will be made to appreciate and comprehend the limits of nature, and the

place of humans within the natural world. Support for this thesis was found in the positive association between worldview and environmental knowledge.

An examination of the affective domain is crucial for a comprehensive understanding concerning how humans relate to the environment. As Milbrath (1990) declared,

> "Almost everyone who has taught environmental studies comes to recognize that ethics are an integral part of the inquiry. As with learning about democracy, an appreciation of such central values as life, health, ecosystem viability, compassion, justice, security, and quality of life must be a central component of the environmental socialization process. In the summer of 1987 the United Nations Environment Programme and the United Nations Educational, Scientific and Cultural Organization called a world conference on Environmental Education and Training. Every one of the three commissions and five symposia at the conference emphasized learning environmental ethics" (p. 292).

The affective domain in regard to what teachers believe is even more critical because teachers' beliefs influence what is taught and how it is taught. Teachers are one of the primary facilitators of environmental-educational experiences. Therefore, it is important to understand the attitudes and beliefs of future teachers in regard to environmental issues because teachers and schools have the potential to be a major influence on future generations of citizens. The present study will examine the beliefs of future teachers. In addition, this study will provide information for teacher preparation programs by describing the affective-environmental domain of one teacher preparation program. The results will suggest directions for further research in teacher education related to environmental beliefs and attitudes.

The following research questions will be considered:

1. What is the environmental worldview of future teachers?
2. Are the worldviews consistent across all three dimensions of the scale?

3. Do education majors (future teachers) have different environmental worldviews as compared to other college students?

Subjects

Subjects were 147 undergraduate students matriculating at a midwestern liberal arts college with an enrollment of approximately 1,000 on-campus students. Data was collected from students at all levels of education (freshman 15%, sophomore 20%, junior 30%, senior 28%, other 7%). The median age of the sample was 20 years. Sixty-four percent of the sample were enrolled in a teacher education program and thirty-six percent were not. Sixty-five percent of the sample were female and thirty-five percent were male.

Method

During the fall 1994 and spring 1995 semesters, students were asked to complete the NEP questionnaire consisting of Likert-type items. The questionnaire was distributed in several different education classes and in several general education courses. Students were approached with the following statement: "We would like to get your opinion on a wide range of important social, political, and economic issues facing the United States." In addition, demographic information including the students' major, year in college, age, and gender was solicited on the questionnaire.

Geller and Lasley (1985) suggested that the factor structure of the NEP scale may differ across various subgroups or populations. Consequently, a principal-components factor analysis was conducted. The analysis supported the three factor model described in previous research (Albrecht et al., 1982; Geller & Lasley, 1985). The three dimensions were balance of nature

(statements 1-4), limits to growth (statements 5-8), and man over nature (statements 9-12). The factor loadings rotated with a varimax rotation all exceeded .51 for each of the respective factors. The twelve item scale achieved a moderate reliability of .79

For the purpose of examining the statements individually, a crosstabulation was computed which crossed the type of student (in Teacher Education Program [T.E.P.] vs. not in T.E.P.) and their agreement with each statement. Strongly agree was collapsed to agree and strongly disagree was collapsed to disagree.

Results

Listed below is the proportion of students (in Teacher Education Program [T.E.P.] vs. not in T.E.P.) by agreement for each statement on the New Environmental Paradigm scale. Responses consistent with the New Environmental Paradigm are indicated with an asterisk (*).

Dimension One: Balance of Nature

S1: The balance of nature is very delicate and easily upset.

	Disagree	Agree *
In T.E.P.	8.5	91.5
Not in T.E.P.	20.8	79.2

S2: When humans interfere with nature it often produces disastrous consequences.

	Disagree	Agree *
In T.E.P.	13.8	86.2
Not in T.E.P.	22.6	77.4

S3: Humans must live in harmony with nature in order to survive.

	Disagree	Agree *
In T.E.P.	10.6	89.4
Not in T.E.P.	11.3	88.7

S4: Mankind is severely abusing the environment.

	Disagree	Agree *
In T.E.P.	8.5	91.5
Not in T.E.P.	11.3	88.7

Dimension Two: Limits to Growth

S5: We are approaching the limit of the number of people the earth can support.

	Disagree	Agree *
In T.E.P.	36.6	63.4
Not in T.E.P.	50.0	50.0

S6: The earth is like a spaceship with only limited room and resources.

	Disagree	Agree *
In T.E.P.	24.7	75.3
Not in T.E.P.	22.6	77.4

S7: There are limits to growth beyond which our industrialized society cannot expand.

	Disagree	Agree *
In T.E.P.	38.0	62.0
Not in T.E.P.	28.0	72.0

S8: To maintain a healthy economy we have to develop a "steady state" economy where industrial growth is controlled.

	Disagree	Agree *
In T.E.P.	27.8	72.2
Not in T.E.P.	26.9	73.1

Dimension Three: Man Over Nature

S9: Mankind was created to rule over the rest of nature.

	Disagree *	Agree
In T.E.P.	75.5	24.5
Not in T.E.P.	78.8	21.2

S10: Humans have the right to modify the natural environment to suit their needs.

	Disagree *	Agree
In T.E.P.	74.2	25.8
Not in T.E.P.	64.7	35.3

S11: Plants and animals exist primarily to be used by humans.

	Disagree *	Agree
In T.E.P.	83.0	17.0
Not in T.E.P.	73.6	26.4

S12: Humans need not adapt to the natural environment because they can make it suit their needs.

	Disagree *	Agree
In T.E.P.	88.2	11.8
Not in T.E.P.	71.2	28.8

The means of the groups (T.E.P. 36.84, Not in T.E.P. 35.74) for the total scale (possible range of 4 to 48) were not significantly different.

Conclusions

The objective of this study was to examine the environmental worldview of preservice teachers. The first research question examined the overall environmental worldview of future teachers. It is apparent that a clear majority of preservice teachers held an environmentally friendly worldview. For each of the statements on the scale two-thirds or more of preservice teachers responded in favor of the NEP.

Some variations did appear when considering the preservice teachers' worldviews across all three dimensions of the scale. The strongest area of agreement with the NEP was in the dimension of "Balance of Nature". Preservice teachers demonstrated an average of 90% agreement with the NEP across the four statements. Similar agreement, although to a slightly lesser degree, was found on the "Man over Nature" dimension, where preservice teachers agreed on average 80% with the NEP. The weakest area of agreement with the NEP was in the dimension of "Limits to Growth" with an average of 68% agreement across the four statements.

When comparing education majors (future teachers) to other college students a chi-square analysis revealed a significant statistical difference (chi-square = 6.56; $p = .01$) on only one statement: "Humans need not adapt to the natural environment because they can make suit their needs" with a greater proportion of education majors in agreement with the NEP. In general, a greater proportion of preservice teachers demonstrated agreement with the NEP compared with other majors. In fact a difference of 9% or more was found on six of the twelve statements. An exception was the statement, "There are limits to growth beyond which our industrialized society cannot expand" where 10% less preservice teachers were in agreement with the NEP compared with students in other majors.

Discussion

The results presented in this study have several interesting implications. The analysis of the environmental worldview of preservice teachers revealed consistent agreement with the NEP for the vast majority of future teachers and college students in general. This is welcome news for environmental educators because it suggests that most of the next generation of teachers, in this sample, hold beliefs that will encourage them to make greater efforts to appreciate and comprehend the limits of nature and the place of humans within the natural world.

The examination of the preservice teachers' worldviews across the three dimensions of the scale yielded more specific information. The proportion of preservice teachers in agreement with the NEP differed for each of the dimensions. This finding suggests that teacher preparation programs should examine potential areas of improvement in issues related to "Limits to Growth" and to a lesser degree "Man over Nature." This information (an administration of the survey would yield quick information for diagnosis) could be shared across curricular areas and used to develop specific strategies for remediation. For example, science classes, science methods classes, and history classes could examine scientific and historical approaches to the interaction between industrial growth and environmental quality.

The analysis comparing education majors (future teachers) to other college students suggested that preservice teachers' environmental beliefs tend to be similar to other college students. A majority of all college students in this sample have beliefs which are consistent with the NEP. The statement concerning limits to growth beyond which our industrialized society cannot expand was the only statement in which substantially more noneducation majors were in agreement with the NEP. One-third of preservice teachers students do not believe that there are

limits to growth beyond which our industrialized society cannot expand. This indicates a misconception. Roth (1991) asserts that for true conceptual change to occur, individuals must first recognize that their personal theories are in conflict with accepted scientific views. Following recognition, individuals need meaningful educational experiences which allow them to struggle with the inconsistencies between their own ideas and scientific explanations. Such experiences require activities designed specifically to challenge the misconception.

This study has presented a preliminary attempt to examine the environmental worldview of preservice teachers. Interpretations should be made with the caution and understanding that the study has several limitations. The sample was small and specialized (undergraduates from a small midwestern liberal arts college). The sample of noneducation majors was small and not representative of a total population. Additionally, there is great need for future research especially in the area of possible educational interventions.

This study does present a precursory, generally positive, picture in regard to the environmental beliefs of preservice teachers. In addition, the study helps to empirically validate the NEP scale. While the findings appear generally positive, the challenge remains to environmental educators and teacher educators to make the statement "the earth is like a spaceship with limited resources" as commonly known and understood as "the earth revolves around the sun".

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